



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,770	10/31/2003	Brian D. Cull	H0003964	1825
128	7590	12/23/2004	EXAMINER	
HONEYWELL INTERNATIONAL INC.			DONG, DALEI	
101 COLUMBIA ROAD			ART UNIT	
P O BOX 2245			PAPER NUMBER	
MORRISTOWN, NJ 07962-2245			2879	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Ak

Office Action Summary	Application No. 10/698,770	Applicant(s) CULL ET AL.	
	Examiner Dalei Dong	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2003.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-18 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/31/2003</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 5 and 17 are objected to because of the following informalities:

Regarding to claim 5, "a first a first set of cathodes" should be changed to "a first set of cathodes".

Regarding to claim 17, "the first fluorescent material, the second pair electrodes" should be changed to "the second fluorescent material, the second pair electrodes".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,811,925 to Anandan.

Regarding to claim 1, Anandan discloses in Figures 1, 4 and 5, a substrate (39); a first channel (37); a second channel (38); a cover lid (40) attached to the substrate (39), the cover lid (40) forming a first enclosure (37) in the first channel (37) and a second enclosure (38) in the second channel (38); and a fluorescent material (phosphor) in the

Art Unit: 2879

first enclosure (37) and the second enclosure (38) and a second lamp in the second enclosure (see column 4, lines 50-65).

Anandan does not specifically disclose the first and second channels are formed in the substrate in this embodiment. However, Anandan teaches in Figure 1, the channels (14) are formed in the substrate (11) by walls (14a) (see column 4, lines 5-23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the first and second channel of Anandan in the substrate of Anandan in order to achieve high emission and uniform illumination upward from the fluorescent lamp.

Regarding to claim 2, Anandan discloses in Figure 4, the first channel (33) is interdigitated with the second channel (34).

Regarding to claim 3, Anandan discloses in Figure 4, the first channel (33) and the second channel (34) comprises serpentine shaped channels.

Regarding to claim 4, Anandan discloses in Figure 4, the first channel (33) and the second channel (34) comprises serpentine shaped channels and wherein the first channel is interdigitated with the second channel.

Regarding to claim 5, Anandan discloses in Figure 4, a first set of cathodes (32 and 35) formed in the first channel (33) and a second set of cathodes (31 and 36) formed in the second channel (34).

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,811,925 to Anandan in view of U.S. Patent No. 6,011,354 to Tsai.

Regarding to claim 6, Anandan discloses in Figures 1, 4 and 5, a substrate (39); a first channel (37) formed in the substrate; a second channel (38) formed in the substrate; a cover lid (40) attached to the substrate (39), the cover lid (40) forming a first enclosure (37) in the first channel (37) and a second enclosure (38) in the second channel (38); and a fluorescent material (phosphor) in the first enclosure (37) and the second enclosure (38) and a second lamp in the second enclosure (see column 4, lines 50-65).

Anandan also discloses to accommodate different colors e.g. red, green and blue (see column 4, line 67 to column 5, line 3), however, does not disclose a third channel formed in the substrate to form a third enclosure defining a third lamp. Tsai teaches in Figure 2, three channels (56 red, 58 green, 60 blue) formed in the substrate to form three enclosures defining three lamps.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the third channel forming a third enclosure defining a third lamp of Tsai for the fluorescent display of Anandan in order to provide an efficient display lamp while obtaining three primary colors of red, green, and blue for the fluorescent lamp.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,811,925 to Anandan in view of U.S. Patent 5,717,284 to Anandan.

Regarding to claim 7, Anandan '925 discloses in Figures 1, 4 and 5, a substrate (39); a first channel (37) formed in the substrate; a second channel (38) formed in the substrate; a cover lid (40) attached to the substrate (39), the cover lid (40) forming a first enclosure (37) in the first channel (37) and a second enclosure (38) in the second channel (38); and a fluorescent material (phosphor) in the first enclosure (37) and the second enclosure (38) and a second lamp in the second enclosure (see column 4, lines 50-65).

However, Anandan '925 does not disclose a second substrate proximate the substrate; a third channel formed in the second substrate, the third channel defining a third lamp, the third lamp adjacent to the first channel in the substrate such that the light can pass from the third lamp to the first lamp. Anandan '284 teaches in Figure 10, stacking of the two substrates (57 and 58) with a transparent window in between the two substrates (57 and 58), and a second substrate (57) proximate the substrate (58), a third channel (60 on the top portion) formed in the second substrate (58), the third channel defining a third lamp, the third channel adjacent to the first channel (60 on the bottom portion) in the substrate such that the light can pass from the third lamp to the first lamp.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have construct the fluorescent lamp of Anandan '925 in accordance to the configuration of two substrates stacked on top of each other of Anandan '284 in order to provide a cost-effective product and substantially flat compact fluorescent lamp product.

Regarding to claim 8, Anandan '925 teaches two channels for the substrate, and the top substrate would also have two channels, one channel is the third channel and the second channel is the fourth channel.

6. Claims 9-16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,011,354 to Tsai in view of U.S. Patent No. 5,717,284 to Anandan.

Regarding to claim 9, Tsai discloses in Figure 2, a fluorescent lamp system (40) comprising: a first substrate (52), the first substrate (52) including a first channel (62); a first channel (56); a first pair (62 and 76) of cathodes at the first channel (56), the first channel (56) and the first pair of electrodes (62 and 76) defining a first lamp (red lamp).

However, Tsai does not disclose a second substrate proximate the first substrate, the second substrate including a second channel; and a second pair of cathodes at the second channel, the second channel and the second pair of the cathodes defining a second lamp. Anandan teaches in Figure 10, stacking of the two substrates (57 and 58) with a transparent window in between the two substrates (57 and 58), and a second substrate (57) proximate the substrate (58), a third channel (60 on the top portion) formed in the second substrate (58), the third channel defining a third lamp, the third channel adjacent to the first channel (60 on the bottom portion) in the substrate such that the light can pass from the third lamp to the first lamp.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have construct the fluorescent lamp of Tsai in accordance to the

Art Unit: 2879

configuration of two substrates stacked on top of each other of Anandan in order to provide a cost-effective product and substantially flat compact fluorescent lamp product.

Regarding to claim 10, Anandan teaches in Figure 10, the second substrate (57) is proximate the first substrate (58) such that the second channel is adjacent to the first channel such that the light can pass from the second channel to the first channel.

Regarding to claim 11, Anandan teaches in Figure 10, the first channel and the second channel are coated with a coating of fluorescent material, and wherein the coating of the fluorescent material is omitted from a region (aperture 59) in the first channel to define an aperture (59) through which light can be transmitted from the second channel to the first channel.

Regarding to claim 12, Anandan teaches in Figure 10, the first channel (60) includes a bottom interior side (aperture side of 59) and wherein the fluorescent material is omitted from the bottom interior side of the first channel (60) to define the aperture (59).

Regarding to claim 13, Anandan teaches in Figure 10, the first substrate (57) is coupled to the second substrate (58) through a transparent cover (54) on the second substrate (58).

Regarding to claim 14, Tsai discloses in Figure 2, a third channel formed in the first substrate, and a third pair of cathodes formed at the third channel, the third channel and the third pair of cathodes defining a third lamp.

Regarding to claim 15, Tsai discloses in Figure 2, a fourth channel formed in the second substrate, and a fourth pair of cathodes formed at the fourth channel, the fourth channel and the fourth pair of cathodes defining a fourth lamp.

Regarding to claim 16, Anandan teaches in Figure 10, the third channel is adjacent to the fourth channel such that light can pass from the fourth channel to the third channel.

Regarding to claim 18, Anandan teaches in Figure 10, stacking of the two substrates (57 and 58) with a transparent window in between the two substrates (57 and 58), and a second substrate (57) proximate the substrate (58), a third channel (60 on the top portion) formed in the second substrate (58), the third channel defining a third lamp, the third channel adjacent to the first channel (60 on the bottom portion) in the substrate such that the light can pass from the third lamp to the first lamp.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have construct the fluorescent lamp of Tsai in accordance to the configuration of two substrates stacked on top of each other of Anandan in order to provide a cost-effective product and substantially flat compact fluorescent lamp product.

Art Unit: 2879

7. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,011,354 to Tsai.

Regarding to claim 17, Tsai discloses in Figure 2, a fluorescent lamp system (40) comprising: a first substrate (52); a first serpentine channel (56); a second serpentine channel (58), the second serpentine channel (58) interdigitated with the first serpentine channel (56); a first pair of electrodes (62 and 72) formed in the first serpentine channel (56); a second pair of electrodes (64 and 74) formed in the second serpentine channel (58); a cover lid (50) attached to the substrate (52), the cover lid forming a first enclosure (56) in the first serpentine channel (56) and a second enclosure (58) in the second serpentine channel (58); a first fluorescent material (red) in the first enclosure (56), the first fluorescent material (red), the first pair of electrodes (62 and 72) and the first channel (56) defining a first lamp; and a second fluorescent material (green) in the second enclosure (58), the second fluorescent material (green) and the second pair of electrodes (64 and 74) and the second channel (58) defining a second lamp.

Tsai does not specifically disclose the first and second channels are formed in the first substrate. However, Tsai teaches in Figures 1A and 1B, that is old and well known in the art to form the channels in the substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have constructed the first and second channels of Tsai within the substrate as well known in the art in order to provide provide a substantially flat fluorescent lamp and an easy method of manufacturing the fluorescent lamp.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art are cited to further show the state of the art of composition of a fluorescent lamp.

U.S. Patent No. 3,409,792 to Martyny.

U.S. Patent No. 5,777,431 to Maya.

U.S. Patent No. 5,834,888 to Allen.

U.S. Patent No. 5,914,560 to Winsor.

U.S. Patent No. 6,218,776 to Cull.

U.S. Patent No. 6,373,185 to Tyler.

U.S. Patent No. 6,639,351 to Tsai.

U.S. Patent No. 6,765,633 to Eom.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (571)272-2370. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571)272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2879

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



D.D.
December 17, 2004



Joseph Williams
Primary Examiner
Art Unit 2879